THE TRAINING OF PARTIALLY SIGHTED CHILDREN
IN A SCHOOL FOR THE BLIND.

M.E. Frampton & V. Stein.

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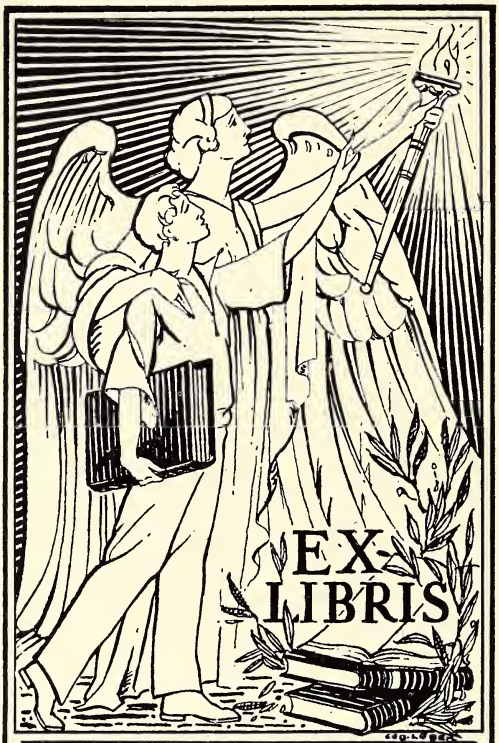

AMERICAN FOUNDATION
FOR THE BLIND INC.

The Training of Partially Sighted Children in a School for the Blind

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PREFACE

This monograph is the fourth of a series of contributions to the literature on methods of the education of the blind.

The aim of this series is to make available, to workers and students in the field of the education of the blind, the literature from other languages and worthwhile English publications dealing with the methods of teaching the blind. The Board of Managers, in making this series possible, presents the view of each author as the author's opinion and not the opinion of the Board of Managers of The New York Institute for the Education of the Blind. In some cases it is possible that the philosophy and general educational policy of the school may be quite different from the view expressed by the author of the monograph.

Mrs. Vita Stein, who has made a special study of partially sighted children in the Hohe Warte School in Austria and in other continental countries, came to the United States on a leave of absence during the fall and winter of 1935. During her stay at The New York Institute for the Education of the Blind she made a careful analysis of the problems of the partially sighted child in The New York Institute for the Education of the Blind and other schools in the United States. Her brilliant mind, sound educational theory, years of teaching experience, and her common sense have made her contribution to this subject a contribution of the highest order and of the greatest value to the administration of this school. Her charming personality and friendly, cooperative spirit helped to make her visit a wonderful experience for our staff and student body.

It is the hope of the authors of this monograph that the beginnings suggested here may lead to a deeper and more complete study of this important problem in the field of the visually handicapped.

May 15th, 1936

M. E. FRAMPTON, *Principal*
The New York Institute for the
Education of the Blind

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The Training of Partially Sighted Children in a School for the Blind

A great deal has been written about the different phases of the sight-saving program. Many excellent treatises and pamphlets concerning the medical, educational, and social aspects of the problem are available and it is not necesssary to repeat here their arguments, or to augment or criticize them in this paper. The aim of this monograph is to bring another point of view—though probably not a new one—to the education of, and work with, partially sighted children who will be called partially blind or children with *very* defective vision. In this monograph special interest is devoted to those pupils who are handicapped by extremely defective vision resulting from high myopia, or progressive diseases of retina and choroid which may lead to further severe impairment or even loss of vision.

Anyone connected with the work for the visually handicapped knows that the expression *blindness,* as a term, is difficult to define. In this work it is used to include persons who have no perception of light and also those who, although able to see, cannot benefit by a sighted method of education or perform any work for which eyesight is essential. Therefore, they may be placed, for all practical purposes of education and vocational adjustment, in the blind category. To this group belong, more or less, those mentioned before and those whom it is proposed to designate *partially blind.*

Since most of these children should use their eyesight very carefully, the type with progressive eye trouble and extremely defective vision should be separated from others whose eye conditions are relatively better and more static. The partially sighted or sight-saving group who cannot follow the ordinary school curriculum on account of their defective vision, but who can see well enough to be taught by special methods involving the use of sight, should be taught in sight saving classes connected with an ordinary school for sighted children rather than in a partially blind class attached to a school for the blind.

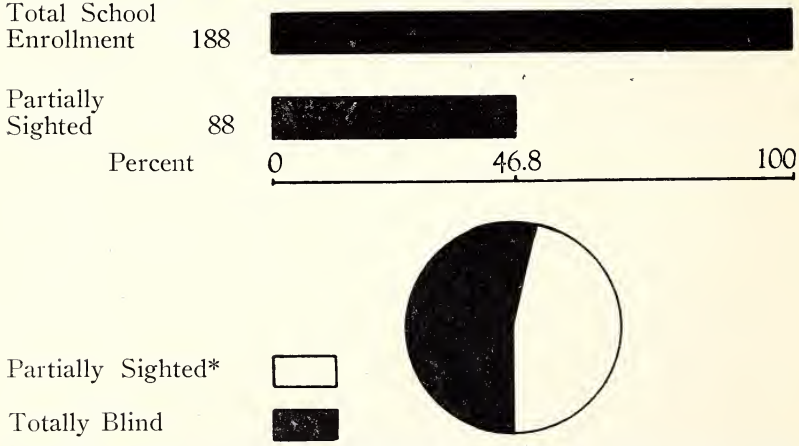
To explain the reasons for this proposal and to present a suggested special curriculum for the partially blind group is the aim of this article.

It will not always be easy to make an exact distinction between these two groups, but it is very necessary to know that many with defective vision, such as those suffering from high myopia, progressive diseases of retina and of the choroid, optic nerve atrophy, retinitis pigmentosa, and albinism, are able to benefit very little by sighted methods of education. The opinion of a reputable ophthalmologist must govern admission of children to classes of either type.

In theory, almost all experts in this field are opposed to admitting to schools for the blind children with even a small degree of vision. However, approximately fifty per cent of the pupils in our blind schools have partial sight and most of them come from the sight-saving classes in public schools because of deteriorating vision.

In The New York Institute for the Education of the Blind for the school year 1935-1936, the following survey of the school population revealed some interesting data. Eighty-eight students, or 46.8% of the entire school population, were partially sighted.*

Chart I, Showing Number and Percentage of Partially Sighted Children in The New York Institute for the Education of the Blind, School Year 1935-1936.



*Partially Sighted Children is interpreted to mean all children with light perception, and upwards, through hand movements, form perception to the border line cases around 20/200.

The study also reveals the fact that 92.0% of the partially sighted children came from the public schools, 6.8% came from the parochial schools, and 1.1% from the private schools.

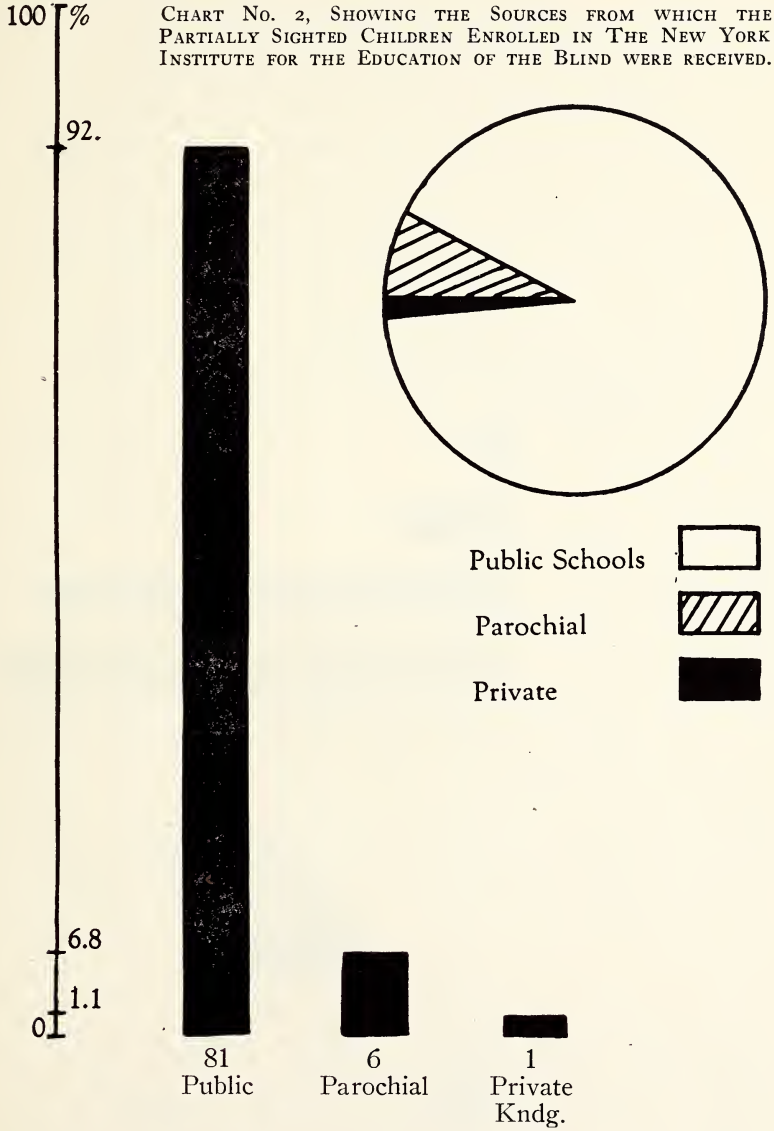
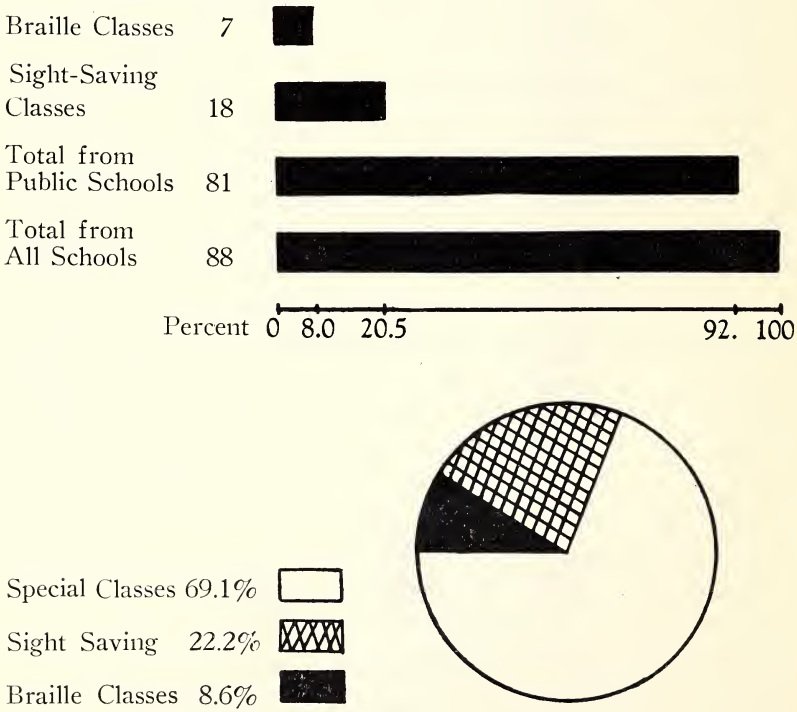


Chart No. 2, Showing the Sources from which the Partially Sighted Children Enrolled in The New York Institute for the Education of the Blind were received.

On further analysis we discover that 22.2% of our partially sighted children were received from sight conservation classes in the public schools, 8.6% from braille classes, and 69.1% from other special classes in the public school system. Our records on previous school attendance were not as complete as we would desire for accurate results. From the records of many of the 69.1% who were received from special classes, we were not able to discover whether they had been at any time enrolled in sight-saving classes or in braille classes. Many had been shifted around from class to class and school to school due to the numerous movements of the family from area to area and the efforts of the public school to meet the special needs of the individual child. It is probably safe

Chart No. 3, Showing Number and Percentage of Partially Sighted Children Enrolled in The New York Institute for the Education of the Blind received from Sight-Saving Classes and Braille Classes in the Public Schools, 1935-1936.



to say that had it been possible to stabilize the family movements and give the public school an opportunity to serve these children through sight-saving classes and braille classes conveniently located, that the percentage received from sight-saving classes would have been at least 50% of the total sample. Regardless of this possibility the important fact which we can substantiate is that 22.2% of our partially sighted children have been received from the sight-saving classes of the public schools and the blind school has been called upon to carry on their education.

TABLE 1. THE DEGREE OF VISION OF THE PARTIALLY SIGHTED CHILDREN IN THE NEW YORK INSTITUTE FOR THE EDUCATION OF THE BLIND, 1935-1936.

Amount of Vision	*Right Eye* O.D.		*Left Eye* O.S.	
	Number	Per Cent	Number	Per Cent
Light perception, hand movements or slight perception of form	42	47.7	33	37.5
Fingers under 1 ft.	17	19.3	20	22.7
1/200	1	1.1	1	1.1
2/200	3	3.4	3	3.4
3/200	2	2.3	4	4.5
5/200	6	6.8	4	4.5
8/200	2	2.3	1	1.1
10/200	4	4.5	4	4.5
12/200	1	1.1		
15/200	3	3.4	7	8.0
20/200	6	6.8	7	8.0
20/40			1	1.1
20/100	1	1.1		
20/70			2	2.3
20/50			1	1.1
Totals	88	100	88	100

It should not be assumed, however, that care has not been taken with the applications which have been presented to the Board of Managers of The New York Institute for the Education of the Blind. The preceding table shows a very small percentage of children in the borderline class. It does show sufficient cases with vision to warrant the administration's giving careful consideration to a curriculum designed to meet their special needs.

Of the eighty-eight partially sighted children, 47.7% have light perception in the right eye and 37.5% light perception in the left eye. In a real sense the school can still claim to be a school for the blind and partially blind.

Many arguments against the policy of the separation of partially sighted children from those who are sighted have been presented by organizations and schools governed by specific philosophies for social and educational procedure.

The following statements are taken from *The Report of the Committee of Inquiry into Problems Relating to Partially Sighted Children,* published by The Board of Education, London, England, 1934, page 49: "It is important, therefore, at the present time, to review the policy of educating partially sighted children with blind children. An investigation of the ophthalmic records of children attending residential schools for the blind shows that there are approximately one hundred and ten partially sighted children in those schools for whom no separate educational provision is made. Though in all probability these children will never be certified as blind under the Blind Person's Act, they are being educated by methods which should be applied only in the education of the blind and they are thus thrust into a 'blind' world during their school life. This practice is indefensible. The children are taught by methods which will not fit them for post-school life, and on reaching sixteen years of age, they are turned out into the sighted world ill equipped educationally and socially, and bereft of the assistance which is available for registered blind persons. The Committee emphatically condemns such a practice, which they regard as a deplorable failure in educa-

tional administration, causing in many cases mal-adjustment and hardship to partially sighted children and adolescents."

The opinion of the majority of both English and American schools of thought is opposed to the admission of partially sighted children to schools for the blind under any conditions.

The late Doctor Eichholz pointed out that it is a fundamental fact that the partially sighted person belongs socially, psychologically, educationally, and industrially to the sighted world. He suggested that harm had been done to the partially sighted by associating with the totally blind, and that there were no compensating advantages. Other opinions stress the view that the admission of partially sighted children to a school for the blind creates a prejudice against the former which acts disadvantageously, particularly when the child at the age of sixteen enters the labor market. This argument is, in a measure, true, but there are many opportunities in a well-developed program of a modern blind school which can and will meet the entire argument as stated by these points of view. It can be done, and the following paragraphs demonstrate the many advantages resulting from the use of the right educational methods for partially blind in a school for the blind.

But before presenting these views, another excerpt is quoted to answer the arguments which may be stated against the position. "A certain number of children in schools for the partially sighted, owing to further deterioration in vision, are transferred to schools for the blind, and a certain number of former pupils in sight conservation classes eventually become blind and are admitted for training into blind workshops. An inquiry addressed by the Committee to medical officers in charge of schools for the partially sighted reveals that the most frequent conditions causing the transfer of partially sighted children to schools for the blind are high myopia, progressive disease of retina and choroid, optic atrophy, retinitis pigmentosa, albinism, relapsing interstitial keratitis, and congenital cataracts. Similar ophthalmic conditions may result in blindness supervening within a few years after the child has left the sight conservation class.

"For example, Liverpool reports that during the last ten years fifteen ex-pupils of special classes for partially sighted have been registered as blind persons at the age of sixteen or over. The following is a summary of the ophthalmic conditions from which they suffered:

Retinitis pigmentosa	7
Optic atrophy	2
Myopia	2
Myopia with coloboma	2
Myopia with coloboma and nystagmus	1
Interstitial keratitis	1
Zonular cataract	1

The ophthalmic records of the partially sighted children enrolled in The New York Institute for the Education of the Blind add additional data to support the analysis presented here.

TABLE 2. DISTRIBUTION OF CAUSES OF BLINDNESS AMONG EIGHTY-EIGHT PARTIALLY SIGHTED CHILDREN IN THE NEW YORK INSTITUTE FOR THE EDUCATION OF THE BLIND.

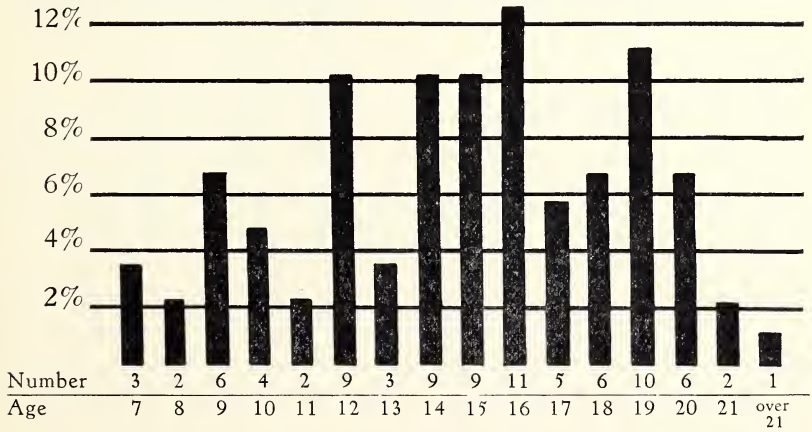
(*Partially sighted is interpreted to mean children with light perception, and upwards through hand movements, slight form perception, to border-line cases around* 20/200)

CAUSES OF BLINDNESS	NUMBER OF CASES
detached retina	2
optic nerve atrophy	18
diphtheria	1
congenital cataract	17
accident	7
interstitial keratitis	3
buphthalmos	4
chorio-retinitis	9
ophthalmia neonatorum	4

retinitis pigmentosa	3
retinitis proliferans and degenerative changes in retina	2
measles	2
excessive myopia	5
brain tumor	1
anophthalmus	1
aniridia with nystagmus	1
endophthalmitis	1
kerato-conjunctivitis eczematosa	1
sympathetic ophthalmia	1
iridocyclitis	1
hymorrhage	1
metastatic chorio-retinitis	1
unknown	2
TOTAL	88

If we examine the ages of the partially sighted children enrolled in the Institute, the grades in which they are now enrolled, and the length of time they have been enrolled in the school, we discover some interesting facts. Speaking generally, we can say that twenty-nine or 33% of the partially sighted children are under four-

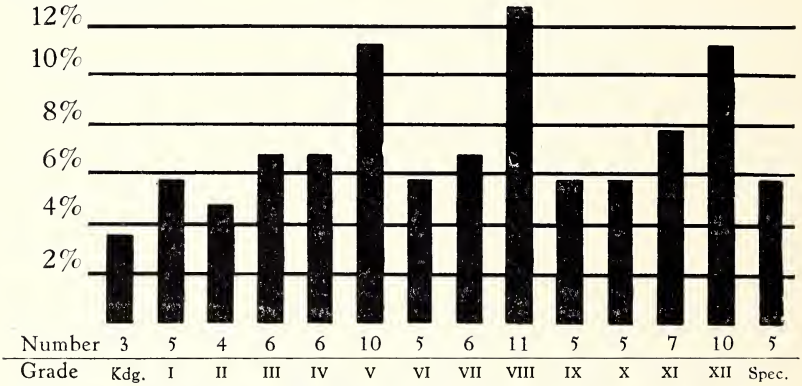
Chart No. 4, Showing Age Distribution of 88 Partially Sighted Children Enrolled in The New York Institute for the Education of the Blind, 1935-1936.



teen years of age and fifty-nine children or 67% of the partially sighted children are over fourteen years of age. (See Chart 4).

Thirty-nine, or 44.3%, of the partially sighted children were enrolled in grades kindergarten through six, and forty-nine, or 55.7% in grades seven through twelve. The question of excessive grade retardation is evident here if we analyze the frequency distribution of these children. The bulk of the partially sighted children in age and grade distribution will be found in high school and junior high school groups with a high frequency distribution in the lower grades nearest the high school and junior high school. (See Chart 5). From these records it seems safe to say that The New York Institute has been receiving children who are well advanced in

Chart No. 5, Showing Distribution by Grades of 88 Partially Sighted Children Enrolled in The New York Institute for the Education of the Blind, 1935-1936.

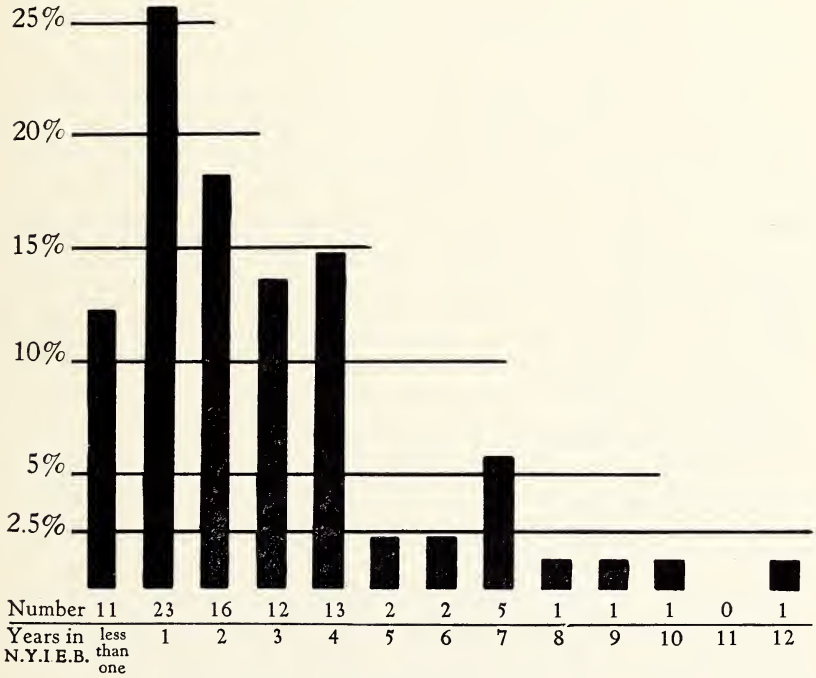


years chronologically, children who have tried to secure their education in the public school system and for various reasons have been dropped or transferred to this special school. It also seems safe to state that, on the whole, children with greatly defective vision have not been received in this school until their elementary program is well along. It might be well to ask a question here. If these children are eventually to be received in the residential schools for instruction, why wait so long? If their educational development demands their enrollment in the residential school at fourteen, why not begin the process of

special training earlier? The best interests of the child call for a careful consideration of this problem. It should be stated here that in some cases the socio-economic conditions and sometimes the domestic problems of the family unit are the direct reason for the transfer to the residential school, but this is by no means the most important reason and does not adequately answer the question raised by an analysis of the facts presented here.

The problem of the partially sighted child and his proper educational care was evidently not merely a problem of earlier years. If we examine our records we see that seventy-five children, or 85.2%, have been enrolled in the Institute during the past four years.

Chart No. 6. Showing the Period of Enrollment of 88 Partially Sighted Children in The New York Institute for the Education of the Blind, 1935-1936.



It is evident from these facts that the transfer of partially sighted children from the public school to the residential

school has not been decreasing, but rather increasing, and particularly in the last two years. Some of this rapid increase may be accounted for by the fact that one residential school has discovered a field of service to visually handicapped children which has not been adequately met by public schools or other private agencies. It is also quite evident that the socio-economic factors of the depression working on the family units have contributed to the increased number of children who must be cared for by the residential schools. A third contributory factor is the inadequacy of present eye examinations and the lack of uniformity and frequency in making and reporting eye diagnosis which is common in residential schools, private schools, and public schools. (See Chart 6).

Statistics like these strengthen the argument and explain the situation in general, and also show the urgency of the proposal to train the partially blind elementary and secondary child in a partially blind class connected with a school for the blind.

There is another fact which confirms this position. One of the most noteworthy things is the absence of books in many sight-saving classes, especially in the high school. Bishop Hartman, Senior Ophthalmologist, a surgeon in London and an important person in the field of sight saving work, forbids reading from books. Other leading ophthalmologists and teachers support his position. He says: "Exercise books, pens or pencils of any sort are not to be used by any of the children in the class under any circumstances. These articles are to be reserved for the exclusive use of the teacher. The withdrawal of books of every sort from the use of the children is done with the express purpose of cultivating the habit of not reading. Reading is too great a temptation for them, and one that must be avoided habitually." (The Sight Saving Class Exchange, published by the National Society for the Prevention of Blindness, April 1927, no. 13, page 47).

Children who are taught by methods such as this are much more handicapped than the blind and are much less well equipped educationally, psychologically, and socially for the sighted world than are blind pupils. The blind have the possibility of reading and writing as well as the sighted. It is no exaggeration at all to

say "as well," because the use of shorthand writing and reading allows them to read and write almost as fluently as sighted people, and a large percentage of the blind are able to do so. Would it not be more sound educational and social philosophy for all the partially blind who are not able to profit by the methods for the sighted to profit by the methods for the blind by means of special methods adapted to their individual needs? Reading and writing are the chief keys to the world, and the child who has no chance of using them because of deterioration of eyesight will never be fit to take his place socially, psychologically, educationally, or industrially in the sighted world.

For this reason, if a child is eventually to live in the realm of the visually handicapped, it is better to fit him for this life as soon as possible. There are many partially sighted children who have sufficient sight to be educated by modified sighted methods, but who, on account of probable further loss of vision, are best grouped as visually handicapped persons. Their number is not negligible, as the statistics from Liverpool and New York prove. The above-mentioned report from London further states: "In the residential blind school alone there are approximately fifty out of fifteen hundred children who are becoming blind after leaving school." And the same report raises this question: "Should such children be educated as sighted persons while their sight renders it possible, or should they be educated by methods suitable for the blind as soon as it is known that they are likely to lose their sight within a few years?"

There is no doubt about the answer to this question. All these children should be taught in a partially blind class connected with a school for the blind, because there, under proper individual treatment, they are able to get the education which is the best calculated to fit their special needs in future life. Some ophthalmologists and many teachers will not agree with this statement. They are of the opinion that it is better to retain a child in a sight-saving class (connected with the sighted schools) as long as the child can profit by education there, more or less irrespective of what the diagnosis might be. They also assert that an intelligent person has little or no difficulty in learning braille in post-school or adult life.

Before continuing with the thesis of this paper, it seems necessary to say something concerning experiences with the education of blind and partially blind students. It is a great mistake to believe that partially blind chidren are depressed in the society of the blind. Parents, teachers and social workers who have such "violent antipathy," as Mr. Edward Evans said, should stay for one day in the school for the blind and they will change their minds. There is a German proverb: "Unter den Blinden ist de Einaugige Konig (in the realm of the blind the man with one eye is a King). These words give a good illustration of the situation in which some partially blind find themselves among the totally blind. It may be that there is a violent antipathy on the part of the partially blind when they first enter the school for the blind, but not for long, for they soon get accustomed to the new surroundings in which they have an important role. "Seeing people," they are called by the totally blind, and may be very helpful, at the same time receiving excellent practical training themselves. They act as guides in the garden and on the street; in social activities; they make reports of all that goes on about them. They are the "eyes" for the blind. Consequently, there exists little of the inferiority complex which seems to worry some educators. But how different the consequences when the partially blind are trained in close cooperation with the sighted. A child who is allowed to read and write only in a very limited way, will never be able to compete successfully with children in an ordinary school. For those children who are allowed to read and write with less restriction there is another danger, for in their desire to be like the others they are tempted to use their eyes more than they would in a class for the blind.

It is not always true that the partially blind child is "King" among the blind, for it sometimes happens that the partially blind are more handicapped than the totally blind. In household science the blind girls go right ahead in their work using their sense of touch; while the partially blind are often unable to profit to any extent by their slight vision or poorly developed touch. The partially blind seem more timid than the blind in the presence of steam and fire and in climbing and hiking in the mountains, the blind sometimes show much more courage and initiative. The same holds true in

physical training, for in most instances the partially blind display a sense of fear not so much noticed in the totally blind who are less able to realize the danger. In handicraft work also, and especially in metal work, pottery, and modelling with clay, the blind—because of their continuous training of the sense of touch—are sometimes able to put out a superior product. The partially blind are handicapped by not applying fully their sense of sight or touch. Therefore, the example of the blind is more encouraging to the partially blind than the example of fully sighted children, and for this reason they will have less feeling of inferiority in a school for the blind than in a school for sighted people.

As to the general opinion that there is a depressing atmosphere in a school for the blind: it can be said that happier children are seldom seen than those in a well-run blind school. No schools for the sighted have a happier atmosphere, and people visiting schools for the blind will justify this statement. Among themselves blind children forget their blindness and are as happy as normal children. A class in a blind school was asked what they would wish from a fairy. Among the ten answers not one expressed longing for vision, and on inquiry they confessed that they had forgotten all about it.

It is suggested that admission to a partially blind class in a blind school be determined as follows: That all partially blind children who have a diopter of almost 2/200 (or 1/20th of sight) begin with instruction in braille reading and writing so that they may be well acquainted with it. When the ophthalmologists in cooperation with the teacher during this period find no deterioration in the pupils' vision, the teacher can start partially blind work; or, if the ophthalmologist finds improvement sufficient to warrant transfer to a sight conservation class, such transfer should be made. Partially blind work should not be started before the pupils have attained a working knowledge of the reading and writing of braille, otherwise they will try to read the braille by sight, which would be decidedly dangerous to their vision and very much lessen their reading abilities. An adult has more difficulty reading braille, needs much more time and patience to acquire a full knowledge of braille, and is never

able to attain equal fluency in its use with a person who became acquainted with the system in childhood.

There are many conflicts of ophthalmological opinion, and this makes for numerous differences in educational practice. There are many methods permitting writing with ink, reading ordinary print, and use of magnifying glasses, and there are also those who forbid the use of these processes. The teacher has a difficult task in choosing the right method. Every case should be judged and treated on its own merits; therefore, only general principles and no hard and fast rules can be formulated.

The most important part of the teaching procedure is to impress these children with the understanding that they themselves have to take care of their eyesight as much as possible, and to observe all rules given. "Eye hygiene" should occupy an important place in the curriculum. Another fundamental principle is to bring to them the consciousness that they are able to see, and to guide them in making the most possible and most suitable use of their eyesight.

Excellent ideas may be found in the report of the Committee on Inquiry into Problems Relating to Partially Sighted Children, published by the Board of Education in London in 1934.

First of all, partially blind children—unless the ophthalmologist does not strictly forbid it—should be trained in the use of their eyes in order that they may have full value of what sight they possess. The curriculum for the partially blind does not differ a great deal from that for the sighted, and except in the methods and materials for teaching, there will be little variation. They must have an adequate command of spoken and written language, of literature, history and geography, of elementary sciences and mathematics, of craft work, music and art. The daily life and all by which it is influenced should be the starting point for the choice of activities. Oral work should be very important. Modification of reading and writing, handwork, and physical training would be necessary.

In general, speech training should come first, because in this field the teacher has a good opportunity to aid the mental develop-

ment of his pupil with few restrictions. Speech training means not only speaking grammatically; it means also practice in conversation, using the common courtesies and conventions of speech. Children should be able to talk with strangers in the same natural way they do with their friends. Through class debates and the production of school plays, expression can be developed. Good speech is one of the best passports to society and it is extremely necessary for a visually handicapped child to make the best of his or her personality.

With speech training the memory should also be trained and oral repetition should be used in the daily exercises. A correct and fluent speech with one's thoughts well expressed should be the result. In this part of the work, the radio and the Talking Book are good substitutes for reading aloud and provide special entertainment and excellent supplementary instruction for the pupils.

The problems which arise from the question of reading are numerous and of the greatest importance. Reading being one of the most important sources we have of contact with the world of ideas, children deprived of its use are extremely handicapped in daily life. With regard to reading, the teachers should realize that in the sight conservation class most attentive care should be given to the size of print and the duration of their lesson. There may be four different groups in this class: Children who are allowed only braille reading, those who should read large hand-printed type, those who need books with larger or smaller sized print, and those who can use ordinary school books and materials. The teacher should also know that there will be children who are able to read, but whose sight might be further injured if they read too much; and then a second group to whom reading may not be dangerous at all and who should be encouraged to read.

A few recommendations for teaching reading to the partially blind are: (subject to medical confirmation in individual cases) (1) An ordinary reading period not longer than half an hour; (2) Individual choice in relation to the size of print; (3) Proposed dis-

tance for reading in most cases fourteen inches; (4) Posture is an important matter. Children should not allowed to peer or stoop over books; (5) No reading by artificial light; (6) Use of magnifying glasses (when it is allowed by the ophthalmologist); and (7) Training in the use of the eyes or "encouraging to see" which can often effect an improvement in the visual acuity.

In close cooperation with the ophthalmologist the teacher will be able to find out the right method for his pupil. But as a general rule it must be said: "The print should be large enough to be easily legible and at the same time small enough to permit the recognition of words and sentences with a minimum number of fixation movements." Printed matter for beginning children should include large printed wall sheets in hand printing, blackboard writing, and books printed in 24 point type; for the older ones, textbooks in 18 point print, also smaller print and even sometimes ordinary print with or without magnifying glasses, for short reading periods. With regard to the selection of reading material, it is very important to know that what the pupil reads is really worthwhile.

A good library for partially sighted, therefore, will have only well-selected books which can give: (1) General knowledge of literature; (2) Information in such subjects as history, geography, science, etc.; (3) Biographies; (4) Books of travel and exploration and many others of permanent value; and (5) Newspapers and magazine articles about daily activities should also be in every library.

Many of the above-mentioned suggestions given for reading can also be used for writing classes. Correct posture and consequent avoidance of eye strain must always be the first consideration. All the methods and materials used for teaching partially blind children writing have been chosen mainly from the point of view of making the children sit upright and keep their heads at the proper distance from the writing surface. A good writing and reading desk is one of the most important special features in a partially blind class. The modern technique has been of very great help and most schools possess excellent desks. Another very good technical help is the typewriter, which should be available for every partially blind

child. For the younger children it is recommended that they write with yellow chalk on the blackboard and with a soft pencil or pen on large paper sheets. For the older ones, small books can be used.

During writing and reading it is most necessary that seats and desks should be placed in such positions as to secure the best light and both reading and writing should be done by artificial light only when absolutely unavoidable. "Windows should face northeast or northwest, or east or west. Window shades should be of sufficient density so that the surface brightness will not cause glare when the sun shines on them."*

There are always a few pupils who like to work in varying degrees of darkness and dark glasses will be found helpful to them.

The art of expression in writing should not be separated from the other lessons. Of course, practice will be needed in expressing ideas, but generally the written work should come naturally in the daily school life and be a part of the other lessons. In this way, using writing as an expression of general school activities, the children are easily trained to express their ideas spontaneously.

The main difficulties in teaching in a partially blind class will be experienced teaching arithmetic and especially the more advanced forms of mathematics. As long as oral work can be used in a school for the blind, nothing goes amiss. But later on the lack of suitably printed books and the difficulty of writing and reading mathematical examples gives rise to frequent problems. Many individual adjustments will be necessary in this subject, but so far as possible a definite program should be followed. As partially blind children have their duties as citizens, their vocational responsibilities and other interests, they should be taught not only the fundamentals of arithmetic, but also of geometry and algebra. Special hand printed and drawn examples will make it possible for teachers to give their pupils an understanding of the different problems and rules. In some cases, the use of braille will offer and enlarge possibilities.

The mental work should not consist merely of learning a few

**A Program of Eye Health in a School System,* by Mary E. Smith, R. N., Publication No. 143, National Society for the Prevention of Blindness, 1935, Page 7.

tricks of calculation; it should comprise, among other methods, graded exercises in operating the small and large numbers, measures, money, changing complicated operations into simpler ones, etc. It is also very necessary that each pupil has his special helps, eg. calendar, measure, and materials for mathematics.

In history, geography, and literature, the curriculum need be little different from that of a school for the sighted or for the blind. All teaching possible should be done orally with the child's daily life as the starting point for all subjects and the interpretation of them will rest more in the hands of the teacher than with the school books. The children should be well trained in map reading, and special maps for geography without many details are recommended. Still better are maps and reliefs made by the pupils themselves.

From the point of view of general activity, science, including hygiene, is very important for a partially blind class. Daily life gives to the children many mechanical, electrical, optical, and acoustical contrivances which arouse their curiosity and demand explanation in terms of simple, scientific principles. Handling and simple repair of such articles is excellent training. To this field belongs also the study of plant and animal life, which can be carried on in and out of school. The ideal place would be the garden on the school grounds.

Physical education has a place of pre-eminence in the curriculum. Every gymnastic lesson should be divided into two parts: the first devoted to the treatment of the many faults of posture and bodily movements of the partially blind child would be considered corrective gymnastics aiming toward development of a good physique, posture, and carriage. The second part should aim to encourage physical activity. The partially blind child is usually less active than the normal child and must be encouraged to get out as much as possible and to take part in physical activities. There are a few restrictions which every teacher should know and which it is more necessary to observe with myopic than with non-myopic children. All exercises in which the body is fully bent forward and downward, jumping and skipping, most of the head movements, etc.,

should be omitted. Folk dances and eurythmics should be practiced as much as possible. Ball games and other games, swimming without diving should not be forgotten, but care should be exercised in training in any sport likely to be dangerous to the eyesight of the pupil.

Another important part in the education of the partially blind is handicraft. There are many different kinds of craftwork with different purposes and all do not have equal worth. The type of work involving no eyestrain and which trains the brain and the hand at the same time is the best. The program or the selection of material and ideas will be determined not only by the demands of the schedule, but also by the probable domestic life of the pupils.

Their artistic abilities can be trained by illustrative work in water colors, drawing in coal and pencil and especially in modelling with clay, but exercises which need close use of the eyes must be avoided. Very good results without any danger to the eyes can be obtained in metal work, woodwork, weaving, pottery, and book binding, while knitting and other needlework for the girls are practical. Most of the handwork just mentioned can be done by touch rather than by sight.

Since it is a most important point of view in the education of the blind that the blind must be fit for the community of the sighted where they have to work and to live, it is as much—perhaps even more important—that the vocational and educational training of the partially blind should be planned with this fact in mind. Schools for the blind have the great advantage of being well informed and specialized as to the vocational training of visually handicapped for the world of the sighted. Some of these pupils have positions in schools for the blind or in the work-shops, and in cooperation with the blind they are especially useful and successful.

But here it seems necessary to say a word to those blind, and the number will not be small, who are afraid of the competition of the partially blind trained in blind schools and who earn their living in the labor market of the blind. In recent years the technical and

mechanical changes have been so rapid that blind labor, unassisted, has lost its market value. The machine age has forced the blind to work in cooperation with the sighted even in those fields where formerly they were independent. And there is another argument in favor of the blind working with the sighted in their economic labor. In the work shops for the blind there are necessarily almost as many sighted as blind workers in order to attain a greater scale of production. Here the partially blind can act as sighted, and can act in the same capacity among them as they can among their blind schoolmates.

It was mentioned before that it is a basic principle in education to fit the blind and especially the partially blind for the sighted world. In keeping with the point of view of approximating as nearly as possible the ordinary condition of life, it is felt that it is better to make as little use as possible of those aids which are especially devised for the partially sighted. Materials which are well known aids in carrying forward an educational program have to do with: (1) the physical environment (type of building, selection of classes); (2) the lighting problem (glass area of the window, artificial lighting); (3) essentials of equipment (movable desks with adjustable tops, typewriters, books in different point sizes, etc.).

It is likewise important to present the methods which have been used very successfully in sight conservation classes where practically no money is available. This handicap became an advantage to the work in one sight conservation class. Institutions in the same situation may benefit by this experience and likewise families who are unable to make special arrangements for the education of partially sighted children.

It was found that the degree of vision is not alone determinative of results, but that the intellectual capacity and the good will of the pupil are of the greatest importance. A very intelligent girl in the class had a visual acuity of counting fingers at 1½ meters, almost five feet. Her handwriting was much better than that of others who had a visual acuity of counting fingers at 10 to 20 feet (3 to 6 meters).

A great deal of success was attained by teaching drawing and

by studying pictures which were carefuly selected with regard to size and color. The results in drawing were astoundingly good even where fairly small sheets of paper were used, the reason for using this method being that the surface of a small sheet of paper may come entirely within the pupil's range of vision. It must also be said that in most cases braille reading and writing was continued and used especially where it was necessary to study in artificial light.

The basic principle was to make use of the simplest means which correspond to everyday life and definite improvement in vision for most pupils was justification for this approach. The results were obtained more quickly and at less expense than with other methods.

A report concerning the results of some sight conservation work was written by Dr. Meissner, Vienna ophthalmologist. The title is "Ophthalmological Matters in a Blind Institution." The abridged translation from the German was made by Dr. and Mrs. E. V. L. Brown of Chicago and is printed under the title "Educational Results in Those with Weak Vision" by the National Society for the Prevention of Blindness. Excerpts from this follow:

"We started with writing on the blackboard and on paper with lines. We now prefer to allow the child to write without lines, as it has been shown that following a line and the effort needed for the formation of letters requires a double exertion. Only when the technique of writing has been mastered may one return to following lines because some children prefer to write on the lined paper, others prefer to write on paper without lines; likewise many prefer to write with ink, while others use only pencils. It also turns out that the upper border of a dark sheet of paper placed beneath the sheet to be written upon serves well as a line marker. No kind of composition is used and each individual child is given his choice. Large print, especially invented for the weak sighted, was used at first. Later, however, in adjusting instruction to everyday life conditions, we used type which corresponds to normal print for those for whom it has been advisable. Also magnifying glasses have been employed. We have succeeded in increasing the self-confidence of our pupils,

make them better satisfied with their fate, and, in so far as possible, make the fight for existence easier."

There will not be many differences between this and any other educational curriculum for the ordinary school program, but it must be adjusted to the special needs of every type of visually handicapped pupil. The purpose of any educational curriculum will be the same, namely, "to make school life meaningful; to provide opportunities for social participation and personal responsibilities, and to find and release resources and creative possibilities." With wise understanding any special educational problem can be solved.

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